

CLAIMS

1. Nozzle for spraying a liquid into the atmosphere, characterised in that it comprises:

- a secondary jet (102) connected to means (200) for supplying said liquid and including means (1) for effecting a first fractional distillation of said liquid and an expansion chamber (2);
- a principal jet (101) connected to means for generating a gaseous flow (300), including means (3) for effecting a second fractional distillation of said liquid and an outlet orifice (4) to the atmosphere; and
- means (5) for connecting said secondary jet to said principal jet, connecting the expansion chamber (2) and the means (3) for effecting the second fractional distillation of said liquid,

2. Spray nozzle according to claim 1, characterised in that the secondary jet (102) is in the form of a cylinder, the central portion of which is occupied by the principal jet (101), which also has a cylindrical configuration, the annular cross-sectional space created thereby forming the expansion chamber (2).

3. Spray nozzle according to one of claims 1 or 2, characterised in that the first and second fractional distillation means (1, 3) comprise a first and second Venturi (6, 7) respectively.

4. Spray nozzle according to claim 3, characterised in that the first Venturi (6) comprises a tapering part (8) followed by a calibrated cylindrical portion (9) terminating in the expansion chamber (2).

5. Spray nozzle according to claim 4. characterised in that the tapering part (8) is in the form of a truncated cone, which is adapted to the calibrated

cylindrical portion (9) through the intermediary of a bearing (27) so that the reduction in cross-section between the supply conduit (203) and the calibrated cylindrical portion (9) is discontinuous.

6. Spray nozzle according to claim 4, characterised in that the calibrated cylindrical portion (9) terminates in the expansion chamber (2) in a recessed manner relative to the wall of said expansion chamber.

7. Spray nozzle according to claim 3, characterised in that the second Venturi (7) includes a tapering part (10) followed by a cylindrical portion (11) terminating in the atmosphere through the outlet orifice (4).

8. Spray nozzle according to one of the preceding claims, characterised in that the means (5) for connection the secondary jet (102) to the principal jet (101) comprise a plurality of conduits (12) disposed radially between the expansion chamber (2) and the cylindrical portion (11) of the second Venturi.

9. Spray nozzle according to one of the preceding claims, characterised in that the expansion chamber (2) has sudden variations in thickness along the longitudinal axis.

10. Spray nozzle according to claim 9, characterised in that the expansion chamber (2) has the smallest thickness in the vicinity of the connection conduits (12).

* Translator's note

Presumably the reference numeral "(6)" is a clerical error for "(7)" in the French text.

11 Spray nozzle according to any of the preceding claims, characterised in that it additionally comprises means (20) for effecting a third fractional distillation of said liquid.

12. Spray nozzle according to claim 11, characterised in that said third fractional distillation means comprise an ultrasonic resonator (21) and a resonance chamber (22) connected to the outlet orifice in the axis of the principal jet.

13. Spray nozzle according to any of the preceding claims, characterised in that said first fractional distillation means (1) for said liquid comprise two first Venturi (6, 6') terminating in the expansion chamber (2).

14. Spray nozzle according to claim 13, characterised in that said first two Venturi (6, 6') each comprise a tapering part (8, 8') followed by a calibrated cylindrical portion (9, 9'), said calibrated cylindrical portion having a different diameter for each first Venturi.

15. Apparatus for spraying a liquid into the atmosphere, characterised in that it comprises:

- a spray nozzle (100) according to any of the preceding claims;
- means (300) for supplying gas under pressure, said means being connected to the principal jet (101);
- means (200) for supplying liquid, said means including a reservoir (201) containing said liquid, the orifice (202) of which is connected to the secondary jet (102); and
- means (400) for checking and regulating the fluids.

16. Apparatus according to claim 15, characterised in that the reservoir (201) is placed at a level such that the orifice (202) of said reservoir is lower than the spray nozzle (100).

17. Method of spraying a liquid into the atmosphere, said method comprising steps which consist of :

- effecting a first fractional distillation of said liquid by suction through a conduit (203, 204), which has a first Venturi (6, 6') terminating in an expansion chamber (2) which is subjected to a negative pressure; and
- effecting a second fractional distillation of said liquid by suction through means (5) for connection the expansion chamber (2) to a second Venturi (7) supplied by a gaseous flow under pressure.

18. Method according to the preceding claim, characterised in that the gas supply pressure of the second Venturi (7) is regulated so that the pressure prevailing at the outlet (4) of said second Venturi is lower than the pressure prevailing in the expansion chamber (2).

19. Method of spraying according to the preceding claim, characterised in that the first and second fractional distillations are effected by means of a spray nozzle according to one of claims 1 to 13, and

- the pressure of the gaseous flow in the principal jet (101) is between 2.5 bars and 3.5 bars, preferably 3 bars; and
- the diameter of the calibrated cylindrical portion (9) of the first Venturi (6) is between 0.3 mm and 1 mm, permitting a delivery of liquid of between 15 ml/min and 40 ml/min.

20. Method of spraying according to one of claims 17 to 19, characterised in that it additionally comprises a step consisting of effecting a third fractional distillation of the liquid by ultrasonic resonance.

21. Use of a spray nozzle according to one of claims 1 to 14 or of an apparatus according to one of claims 15 and 16, for disinfecting premises used for medical, paramedical or food-processing purposes.